

**Listing of the Claims**

Please cancel claims 11-14, 18 and 20, and amend claims 1, 10, 15, 19 and 21 as shown. The following listing of claims will replace all prior versions, and listings, of claims in the application:

**1. (currently amended)** An apparatus comprising:

a variable acoustic source acoustically coupled to a volume, the volume being divided into an air region and a fluid region, the fluid region having a fluid output;

a microphone acoustically coupled to the volume;

a first processor configured to receive a signal from the microphone, and further configured to determine a volume of the air region;

a fluid valve configured to allow an amount of fluid to exit the fluid region, the amount of fluid being associated with the determined volume of the air region; and

an atomizer coupled to the fluid output, the atomizer configured to aerosolize at least a portion of the amount of fluid to exit the fluid region. [[.]]

**2. (original)** The apparatus of claim 1, further comprising a volume sensor configured to output a first signal associated with a volume of the aerosol, and wherein the amount of fluid to exit the fluid region is further associated with the signal associated with the volume of the aerosol.

**3. (original)** The apparatus of claim 1, further comprising a second processor configured to calculate a volume of the aerosolized fluid and configured to output a

volume signal associated with the calculated volume, and wherein the amount of fluid to exit the region is further associated with the volume signal.

4.     **(original)** The apparatus of claim 2, further comprising a second processor configured to receive the first signal, calculate a volume of the aerosolized fluid, and output a second signal associated with the calculated volume, wherein the amount of fluid is further associated with the second signal.

5.     **(original)** The apparatus of claim 1, wherein the first processor is further configured to send a control signal to the fluid valve.

6.     **(original)** The apparatus of claim 5, further comprising:  
a target region coupled to the fluid valve and in selective communication with an air tank through an air valve.

7.     **(original)** The apparatus of claim 6, wherein the first processor is further configured to send a control signal to the air valve.

8.     **(original)** An apparatus comprising:  
a first processor configured to calculate an aerosol volume and to output a volume signal associated with the calculated aerosol volume;  
a second processor configured to  
receive an acoustic signal representing an acoustic property of a volume;

calculate, using the received acoustic signal, a quantity associated with a first fluid volume;

receive the volume signal from the first processor; and

output a signal for controlling a valve, the output signal being associated with the received acoustic signal and with the received volume signal.

9. **(original)** The apparatus of claim 8, wherein the valve is in communication with an atomizer.

10. **(currently amended)** The apparatus of claim 9, further comprising:

a light source and light detector, the detector configured to output a signal associated with light scattering from the aerosol;

a flow rate sensor configured to output a signal associated with a flow rate of the aerosol; and

wherein the calculation of the aerosol volume is associated with the output signal from the light detector and with the output signal from the pressure sensor.

11-14. **(canceled)**

15. **(currently amended)** An ~~The~~ apparatus of ~~claim 14~~, comprising:

means for dispensing a first fluid;

means for aerosolizing the first fluid in communication with the means for dispensing the first fluid;

means for determining aerosol volume coupled to the means for aerosolizing the first fluid;

wherein the means for dispensing the first fluid includes a means for metering a second fluid based on the signal associated with the aerosol volume, and further based on an acoustic property of the means for dispensing the first fluid.

16. **(original)** A method comprising:

calculating a plurality of acoustic resonances associated with a variable-volume chamber;  
calculating a volume of the variable-volume chamber, the calculated volume being associated with at least one of the plurality of acoustic resonances;  
receiving an aerosol volume signal associated with a volume of an aerosol; and  
outputting an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.

17. **(original)** A medium storing instructions to cause a processor to:

calculate a plurality of acoustic resonances associated with a variable-volume chamber;  
calculate a volume of the variable-volume chamber, the calculated volume being associated with at least one of the plurality of acoustic resonances;  
receive an aerosol volume signal associated with a volume of an aerosol; and  
output an amount of fluid, the amount of fluid being associated with the aerosol volume signal and with the calculated volume of the variable-volume chamber.

18. **(canceled)**

19. **(currently amended)** ~~The~~ A method of ~~claim 18~~, further comprising:

metering a first fluid using an acoustic volume transducer;

converting the first fluid to an aerosol;

calculating a volume of the aerosol;

receiving a signal associated with the calculated volume; and

metering a second fluid using an acoustic volume transducer, the metering being based on the received signal.

20. **(canceled)**

21. **(currently amended)** ~~A~~ The medium of ~~claim 20~~, storing further instructions to cause a processor to

meter a first fluid using an acoustic volume transducer;

convert the first fluid to an aerosol;

calculate a volume of the aerosol;

receive a signal associated with the calculated volume; and

meter a second fluid using an acoustic volume transducer, the metering being based on the received signal.

22. **(original)** A method comprising:

calculating a volume of the variable-volume chamber, the calculated volume being associated with an acoustic property of the variable-volume chamber;

receiving an aerosol volume signal associated with a volume of an aerosol; and  
outputting an amount of fluid, the amount of fluid being associated with the aerosol  
volume signal and with the calculated volume of the variable-volume chamber.

23. **(original)** The method of claim 22, wherein the acoustic property of the variable-  
volume chamber is an acoustic resonance of the variable-volume chamber.

24. **(original)** The method of claim 22, wherein the acoustic property of the variable-  
volume chamber is an amplitude of an acoustic wave in the variable-volume chamber.

25. **(original)** A medium storing instructions to cause a processor to:  
calculate a volume of the variable-volume chamber, the calculated volume being  
associated with an acoustic property of the variable-volume chamber;  
receive an aerosol volume signal associated with a volume of an aerosol; and  
output an amount of fluid, the amount of fluid being associated with the aerosol volume  
signal and with the calculated volume of the variable-volume chamber.

26. **(original)** The method of claim 25, wherein the acoustic property of the variable-  
volume chamber is an acoustic resonance of the variable-volume chamber.

27. **(original)** The method of claim 25, wherein the acoustic property of the variable-  
volume chamber is an amplitude of an acoustic wave in the variable-volume chamber.